

# **XM297 CANNON SYSTEM FOR THE CRUSADER SYSTEM:**

*"A Unique Government - Industry Team"*

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Armaments Research Development & Engineering Center (ARDEC)  
Tank automotive & Armaments Command (TACOM)**

**United Defense**

**Armament Systems Division  
United Defense - Limited Partnership**

**34th ANNUAL GUN & AMMUNITION  
SYMPOSIUM & EXHIBITION  
26-29 APRIL 1999**

**CRUSADER**



## BRIEFING OUTLINE

- CRUSADER SYSTEM DESCRIPTION
- CRUSADER -"THE ARMY'S FLAGSHIP DEVELOPMENT PROGRAM"
- 
- 155MM XM297 CANNON
- CANNON DEVELOPMENT SCHEDULE
- 
- SIGNIFICANT ACCOMPLISHMENTS
-



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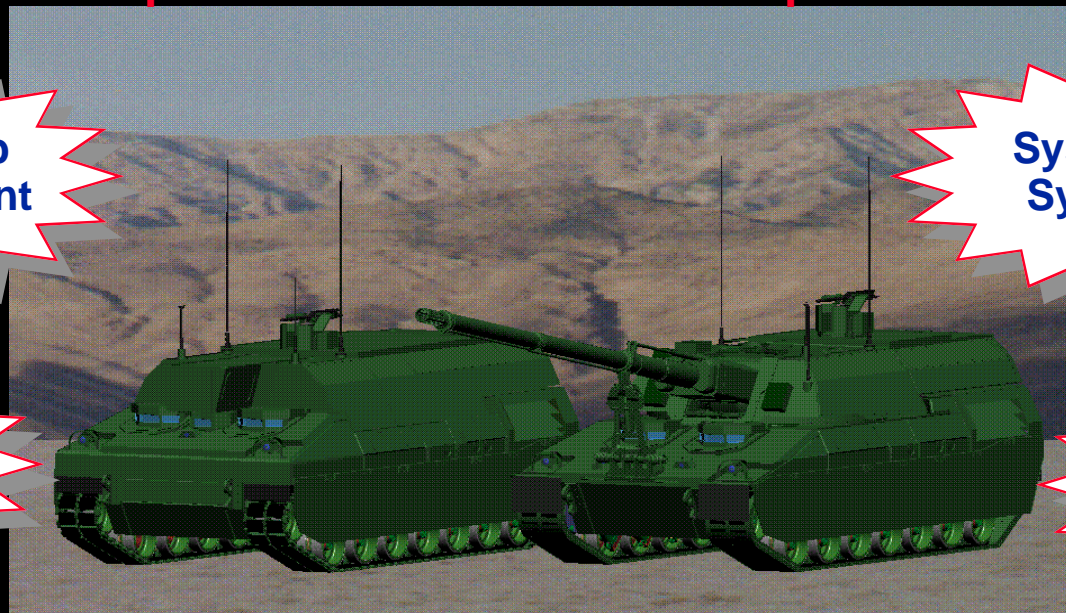
## What is Crusader?

The Next Generation Field Artillery System of Systems . . .  
155mm Self-Propelled Howitzer and its Companion Armored Resupply Vehicle

Ground Up  
Development

System of  
Systems

CRUSADER  
IS SPH AND  
RSV



Innovative  
Acquisition  
Strategy

### Why Crusader? . . .

- More Mobile
  - More Lethal
  - More Survivable
    - Enhanced Supportability
    - Less Manpower Intensive

### Common Componentry

- 66% Common
- 24% SPH  
Unique
- 10% RSV  
Unique

**CRUSADER**



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# Why Crusader?

Today  
(Paladin)

21st  
Century  
(Crusader)

## XM297 Requirements

US Forces  
Need a  
More  
Lethal,  
Mobile,  
Survivable  
Howitzer

Crusader  
Provides  
Technology  
and  
Firepower  
for the 21st  
Century  
Warfighter

Rate of Fire

Range

Mobility

Manpower

4 RPM

30 KM

28 KM/HR

9 Soldier  
Crew

Threat  
Systems Shoot  
up to 9 Rounds  
per Minute at  
Ranges in  
Excess of  
40 Km

10-12 RPM

40-50 KM

39-48 KM/HR

6 Soldier  
Crew

- † Burst Fire - 10 rounds/min for 3 mins
- † Sustained Fire 3 rounds/min for 10 mins

- † Max Range - 40 km
- † Min Range - 4 km

- † Minimum Weight
- † Improve Survivability

- † High Reliability
- † Extended Service Life
- † Increased Maint. Intervals
- † Automated Operation

A Quantum Leap in Total Force Effectiveness

CRUSADER



# CRUSADER

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## ***“THE ARMY’S FLAGSHIP DEVELOPMENT PROGRAM”***

- **IMPLEMENTS STREAMLINED ACQUISITION**
- 
- **CONSOLIDATES RESPONSIBILITY TO THE PRIME CONTRACTOR**
- 
- **AVOIDS USING GOVERNMENT FURNISHED MATERIALS (GFM)**



# TRADITIONAL DEVELOPMENTS

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## FOCUS ON GOVERNMENT FURNISHED MATERIALS

Programmatic Direction:  
Howitzer System (Less Armaments Sub-system)  
Configuration Conflict Resolution

Programmatic Direction:  
Armaments Sub-system  
Funding  
Configuration Conflict Resolution

PRIME CONTRACTOR

Office of the Project Manager

ARDEC/Picatinny

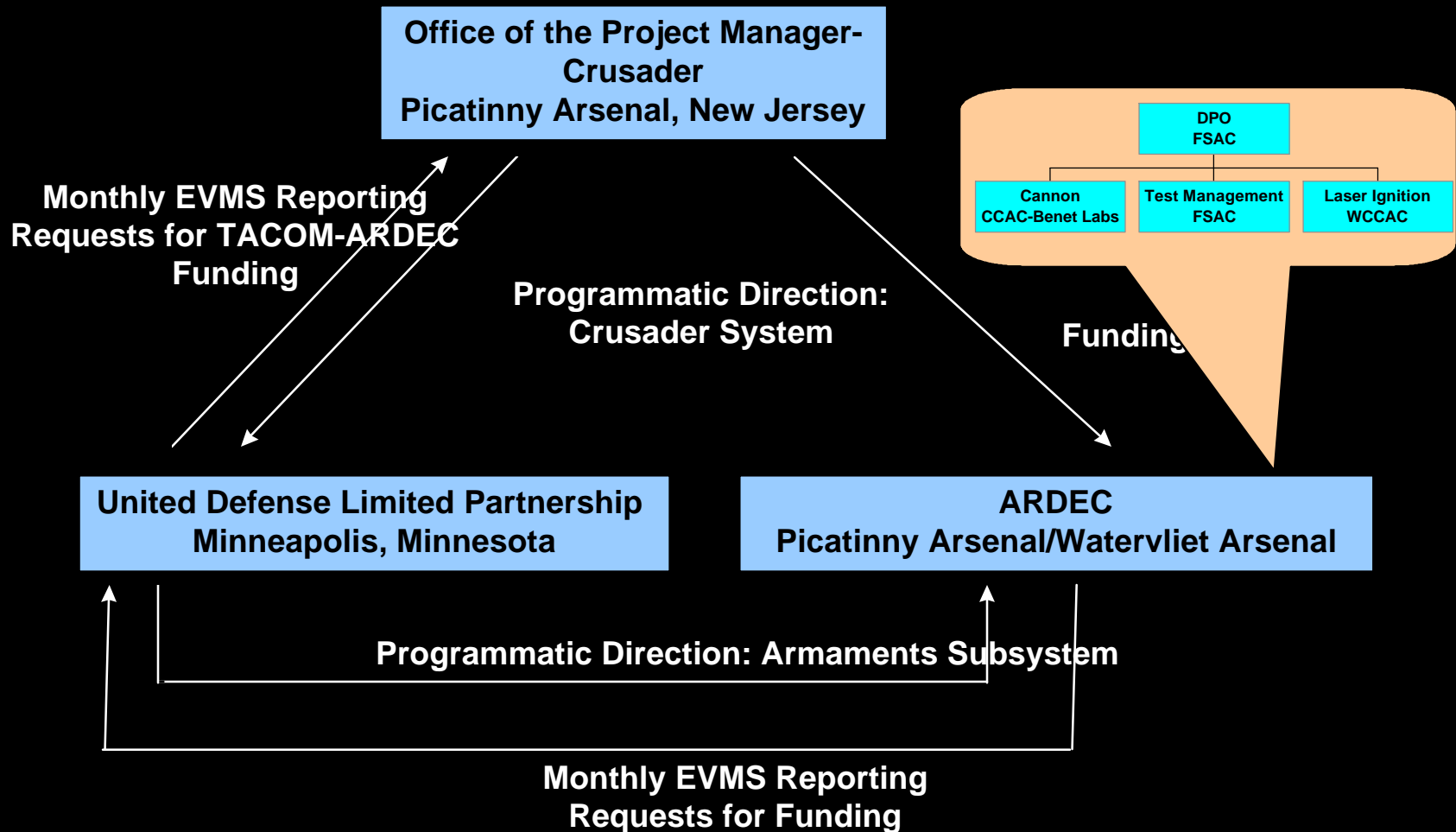
Monthly EVMS Reporting  
Configuration Conflict Issues

Quarterly Government Internal Reporting  
Requests for Funding  
Configuration Conflict Issues



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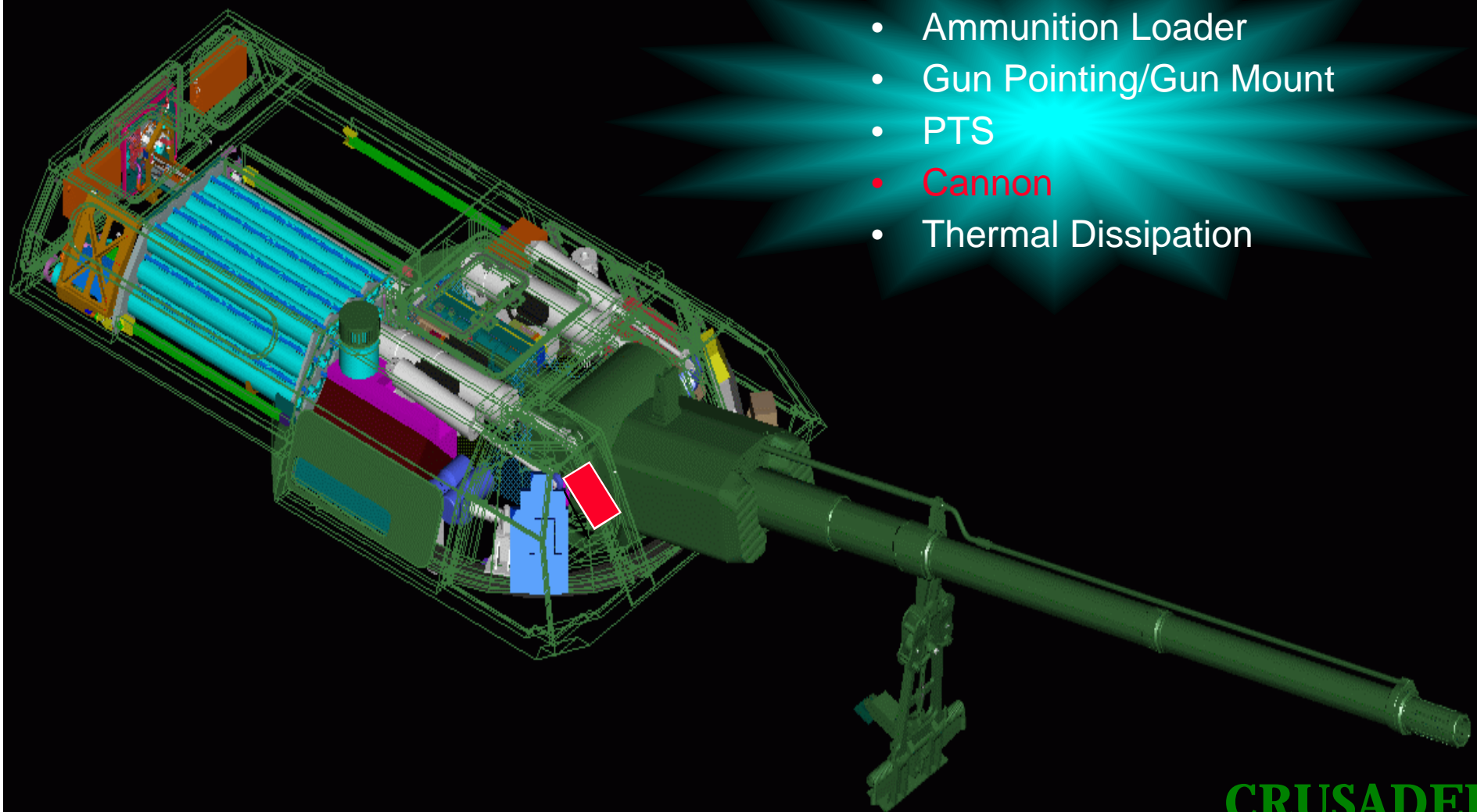
# THE CRUSADER RELATIONSHIPS





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## FIREPOWER ELEMENT



- Ammunition Loader
- Gun Pointing/Gun Mount
- PTS
- Cannon
- Thermal Dissipation

CRUSADER





# 155 mm XM297 CANNON SUBSYSTEM

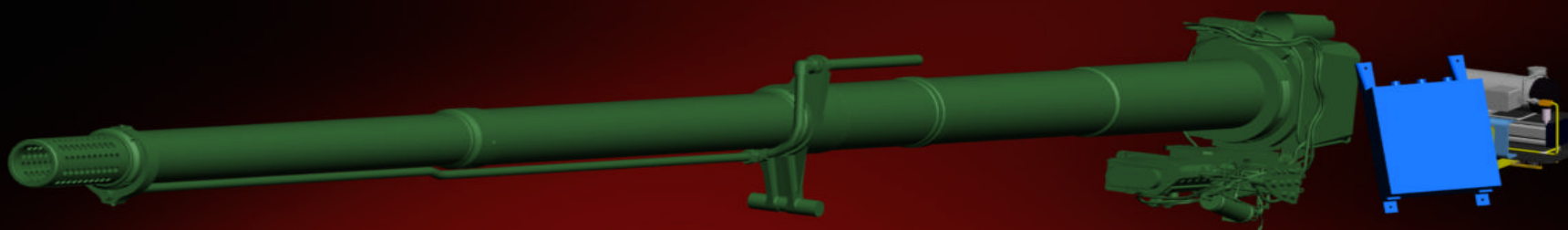
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- **GOAL - DEVELOP ARTILLERY CANNON WITH:**
  - INCREASED RANGE
  - HIGHER RATES OF FIRE
  - SIGNIFICANTLY INCREASED SUSTAINED RATE OF FIRE
- 
- **DESCRIPTION: XM297 CANNON DEVELOPED FOR CRUSADER**
  - 56 CALIBERS IN LENGTH
  - FULL LENGTH COOLING
  - INTEGRAL MUZZLE BRAKE
  - LASER IGNITION
  - FULLY AUTOMATED BREECH OPERATION
  - COMPLETE INTEGRATION WITH AUTOLOADER
-



# XM297 CANNON SUBSYSTEM

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**CRUSADER**

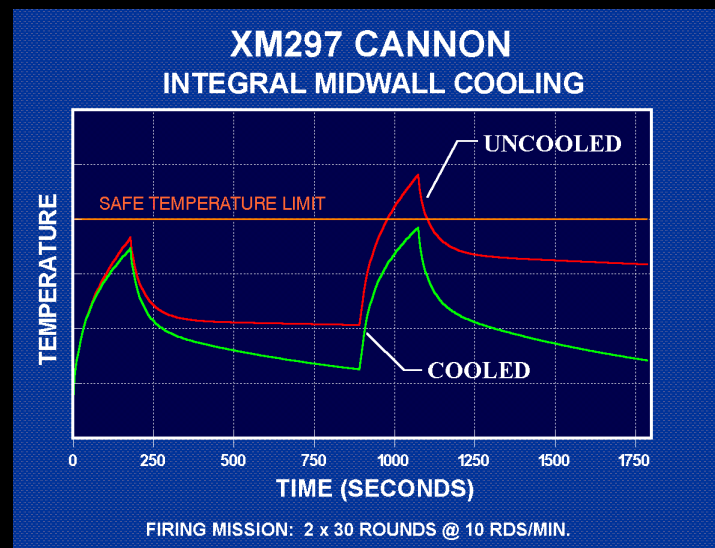
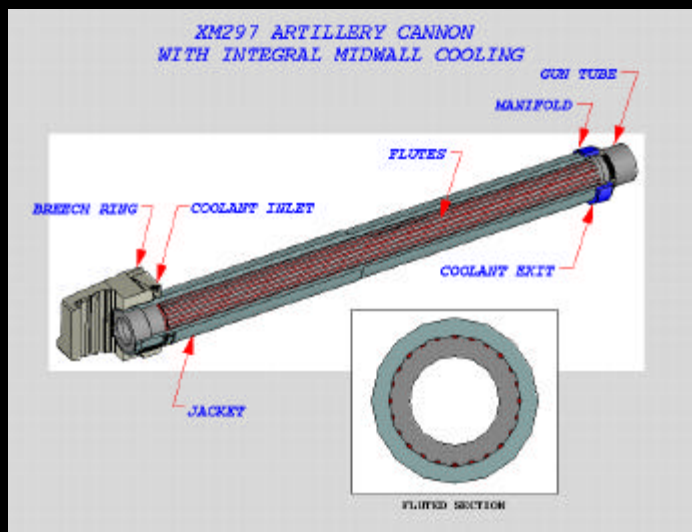


# 155MM XM297 CANNON

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## UNIQUE FEATURES

- **FULL LENGTH COOLING**
  - ENABLES HIGH AND SUSTAINED FIRING RATES
  - REDUCES RISK OF PROPELLANT COOKOFF
  - REDUCES RISK OF PROJECTILE EXUDATION
  - IMPROVES ACCURACY AND DISPERSION
  - INCREASES TUBE WEAR LIFE



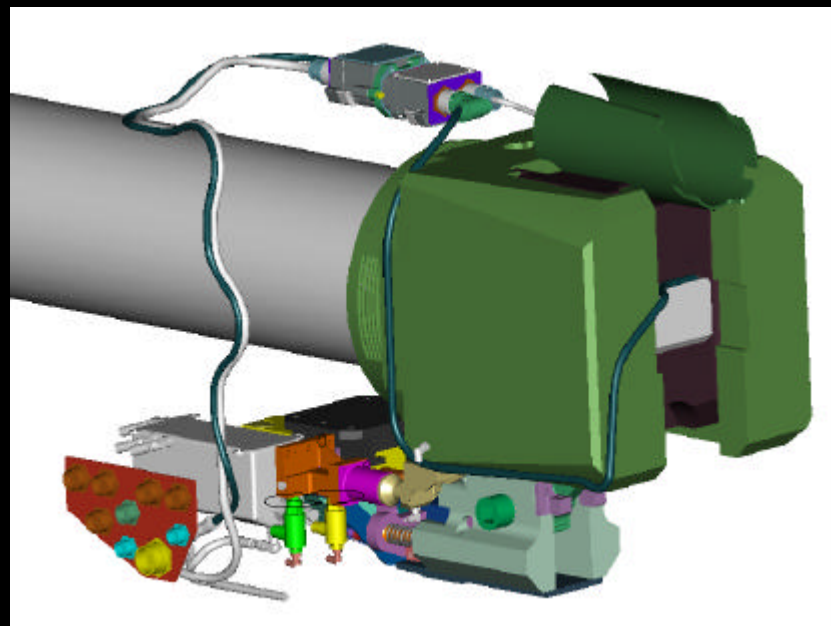


# 155MM XM297 CANNON

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## UNIQUE FEATURES

- **LASER IGNITION SYSTEM**
  - ELIMINATES BURDEN OF CONSUMABLE PRIMERS
  - REDUCES OPERATIONAL COSTS
  - ENABLES AUTOMATED FIRING
  - REDUCES RISK OF MISFIRE
  - INCREASED IGNITION RELIABILITY



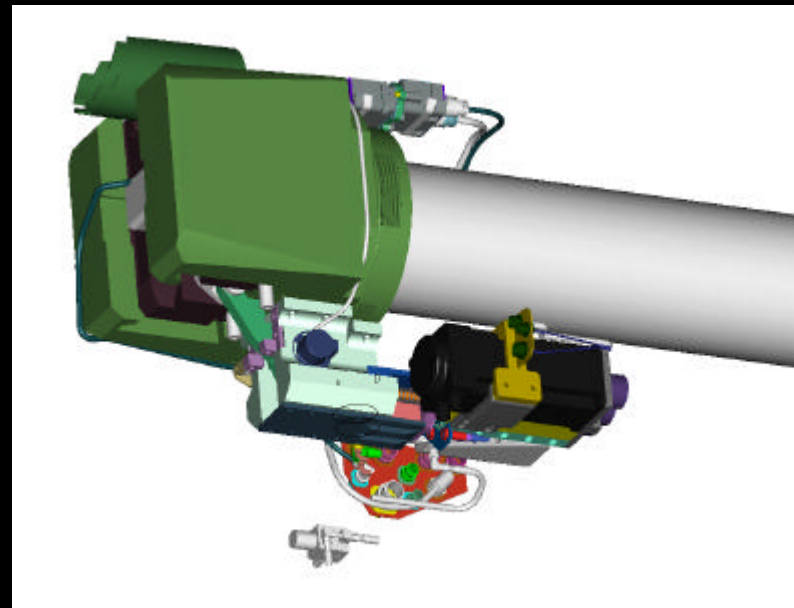


# 155MM XM297 CANNON

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## UNIQUE FEATURES

- **AUTOMATED OPERATION**
  - NO CREW IN THE WEAPONS COMPARTMENT
  - ENABLES AUTO LOADING/REDUCED CREW SIZE
  - MAXIMIZES RATE OF FIRE
  - MINIMIZES VEHICLE SIZE





## SUCCESS POINTS IN THIS ACTIVITY

- NEGOTIATIONS WERE VERY SMOOTH
- TEAM LEVEL COMMUNICATIONS HAVE BEEN EXCELLENT
- TECHNICAL ISSUES TACKLED AND SOLVED JOINTLY
- CANNON DELIVERED:

**HARDWARE INTEGRATED INTO  
CRUSADER TURRET, CANNON  
AND MOUNT PROOF FIRED**





# 155MM XM297 CANNON

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## XM297E2 CANNON

### HARDWARE

BREECH DELIVERY

TUBE DELIVERY

### CANNON TESTS

PROOF

PDRR CANNON  
CHECKOUT

PRELIM FIRING TABLES

TUBE WEAR

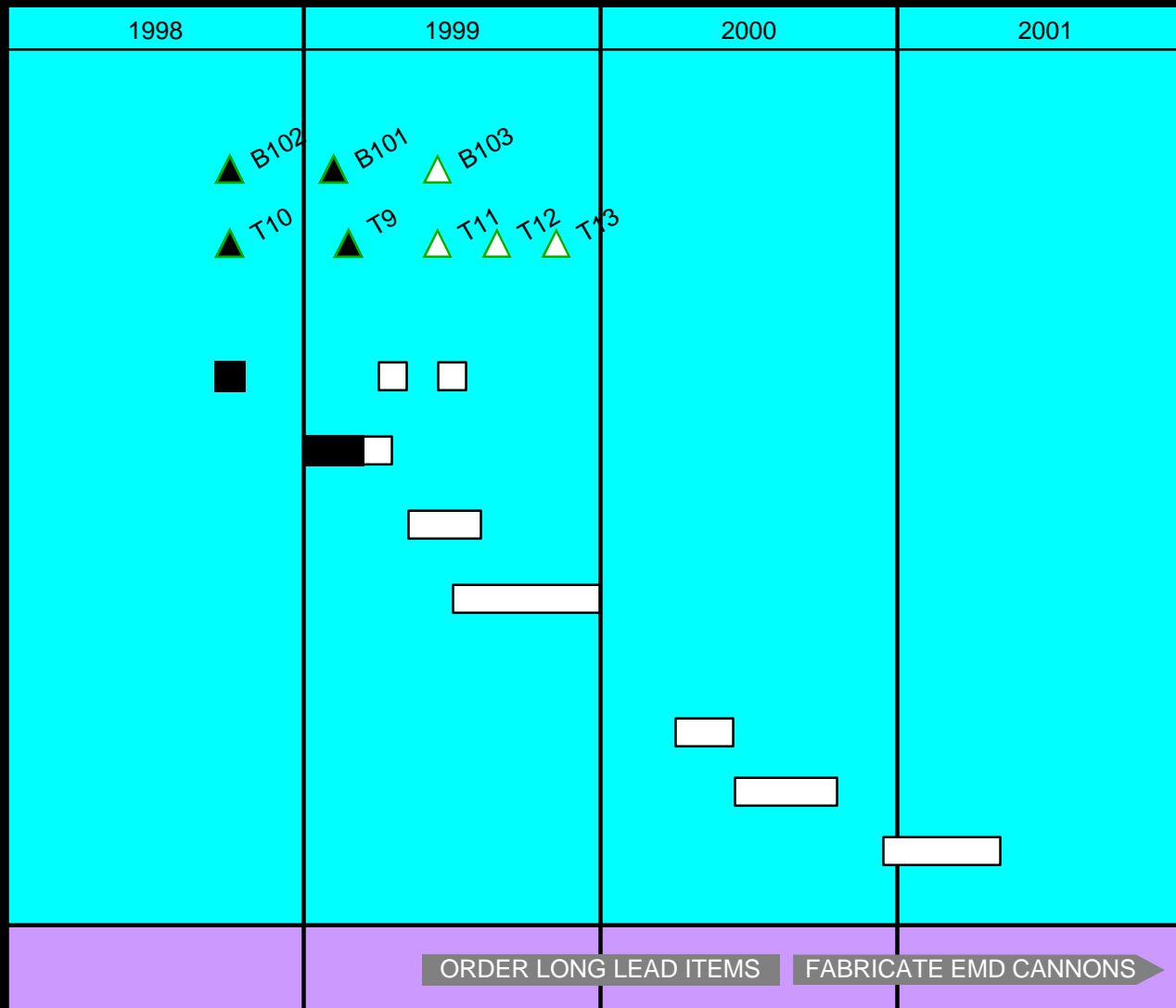
### VEHICLE FIRING TESTS

SHAKEDOWN

EDT/EUE

GOVERNMENT

### EMD ACTIVITIES





# 155MM XM297 CANNON

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## SIGNIFICANT ACCOMPLISHMENTS

- BREECH MOUNTED LASER IGNITER FIRED & SHOCK TESTED
- CANNON FIRED AT 8.6 ROUNDS/MIN
- FULL LENGTH COOLING DEMONSTRATED
- AUTOMATIC OPERATION DEMONSTRATED
  - ELECTRIC BREECH
  - LASER IGNITER
  - LASER WINDOW CLEANER
- TWO GUN TUBES FATIGUE TESTED
- TWO BREECHS FATIGUE TESTED
- 40+ km RANGE DEMONSTRATED
- OVER 4000 ROUNDS FIRED ( 2800 EFC )

